**Place Value of Whole Numbers**

**Expanded Notation**

When we write numbers using expanded notation, we identify and name the value of each digit.

4 231 = 4 000 + 200 + 30 + 1

2

**Express the numbers in expanded notation:**

400 + 60 + 8

8000 + 200 + 40 + 6

**a)** 8 246 **b)** 468

700 + 60 + 1

1000 + 600 + 40 + 5

**c)** 761  **d)** 1 645

7000 + 300 + 80 +5

900 + 70 + 1

**e)** 971 **f)** 7 385

1000 + 900 + 70 + 8

**g)** 1 978

**.............................................................................................................**

**Express the expanded notation in numerals:**

3745

687

**a** 600 + 80 + 7 = **b** 3 000 + 700 + 40 + 5 =

269

834

**c** 800 + 30 + 4 = **d** 200 + 60 + 9 =

7920

2846

**e** 2 000 + 800 + 40 + 6 = **f** 7 000 + 900 + 20 + 5 =

9832

245

**g** 200 + 40 + 5 = **h** 9 000 + 800 + 30 + 2 =

**Answer the following questions.**

**a)** Tim says 4 329 in expanded notation is written as 4 000 + 3 000 + 29. Is he correct?   
  
ANSWER: no because he put the tens and units together.

**b)** Now he says that 5 847 is written as 5 000 + 800 + 40 + 7. Is he correct this time?   
  
ANSWER: yes

**c)** Look carefully at the number 8 953. Why don’t we expand it as 8 + 9 + 5 + 3 ?

ANSWER: because it doesn’t have the zero’s so the 3 could be in the thousands (it would be completely jumbled)

**d)** What is the point of a zero in the middle of 7 049? It has no value so why not just leave it out?

ANSWER: because the number would become 749 which would be completely different.  
  
**.............................................................................................................**

Look at the number **2** **123 456**.

2 is worth 2 000 000 or 2 million  
1 is worth 100 000 or one hundred thousand

2 is worth 20 000 or two ten thousands

3 is worth 3 000 or three thousands

4 is worth 400 or four hundreds

5 is worth 50 or five tens

6 is worth 6 or six units

When we write large numbers we put a space after every three numbers. This is because our brains prefer small chunks of information. We chunk from right to left: 2 568 023.**3**

**Write the number shown in each row of this place value chart. The first one has been done for you. Don’t forget your commas ( , ) !!!**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Millions** | **Hundred Thousands** | **Ten**  **Thousands** | **Thousands** | **Hundreds** | **Tens** | **Units** |
| 45 168 |  |  | 4 | 5 | 1 | 6 | 8 |
| 8, 763, 075 | 8 | 7 | 6 | 3 | 0 | 7 | 5 |
| 3, 875, 632 | 3 | 8 | 7 | 5 | 6 | 3 | 2 |
| 25,774 |  |  | 2 | 5 | 7 | 7 | 4 |
| 8191 |  |  |  | 8 | 1 | 9 | 1 |
| 3041 |  |  |  | 3 | 0 | 4 | 1 |

**Identify the value of the digit in bold. The first one has been done for you.**

4 units

9 thousands

**a** 54**9** 157 **b** 9 54**4 c** 8**5** 749

5 Tens of thousands

4 Hundreds of thousands

8 tens

4 hundreds

**d 4**67 849 **e** 12 **4**68 **f** 4 6**8**8

9 Tens of thousands

4 thousands

3 tens

**g** 1**3**4 **h** 9**4** 115 **i** 9**9**4 913

**True or False?**

**a** In the number 567 923, the 7 has the value of 7 000.   
 **b** In the number 899 471, the 8 has the value of 80 000.

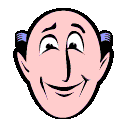
true

**Place Value of Whole Numbers**

false

**Place Value to 6 Digits**

**A useful strategy is to make lines where each digit should go and fill them in as you work them out.**



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| I have 6 digits.  If you add one unit to me I have 7 digits.  What number am I?     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 9 | 9 | 9 | 9 | 9 | 9 |   I am |
| I have 5 digits.  I have a 6 in the ten thousands place and my digit in the unit place is the smallest even number.  My middle digit is one more than the units digit.  My thousands digit is double my units digit and my tens digit is double my thousands digit.  What number am I ?  I am   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 6 | 4 | 3 | 8 | 2 | |
| I am one half of a million plus one.  What number am I?   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 5 | 0 | 0 | 0 | 0 | 1 |   I am |

In this guessing game there are many clues. Your job is to not only

guess the secret number, but to identify which clues are needed

and which are true but don’t help solve the problem.

**Getting   
 Ready**

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Use the clues and the hundreds chart to help you identify the secret number:

**What to Do**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 93 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

The number is greater than 8

The number is less than 500

The number is not a multiple of 5

The number is a multiple of 6

The number is even

Its tens digit is even and is double its units digit

The number is in the top half of the hundreds chart.

What is the number?

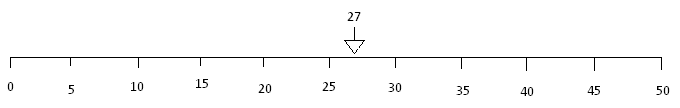
48

**Round and Estimate- Round to a Power of 10**

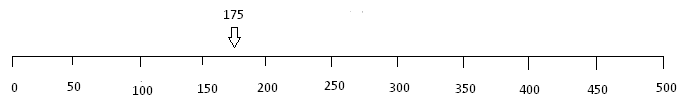
Rounding makes big numbers easier to work with. We round up if the number is exactly halfway between the 10s or over the halfway mark. We round down if the number is under the halfway mark.

**Rounding to the nearest 10**

27 is over halfway between the 10s, so it rounds up to 30.



**Rounding to the nearest 100**  
175 is over halfway between 100 and 200 so rounds up to 200.



**Round the following numbers to the closest hundred:**

**a** 235 **b** 680

700

200

**Use the number in tens place to help you make your decision.**

500

500

**c** 513 **d** 450

3 700

5 200

**e** 5 164 **f** 3 748

**Round the following numbers to the closest thousand:  
  
a** 942 **b** 4 964

1000

5000

**Use the number in hundreds place to help you make your decision.**

9000

2000

**c** 2 435 **d** 9 350

3000

6000

**e** 5 678 **f** 2 845

Teacher Comment and Assessment

Chloe has shown a consolidated understanding of numbers, their place value and structure. She has been able to demonstrate her understandings and show that she has a clear understanding of this concept.

Chloe should be commended on her effort and success with this topic!